C L A I M S

1. A method for cyclonic separation of gaseous and liquid fractions from a multiphase fluid mixture, the method comprising:

- providing a cyclonic separation vessel having a bottom section, a top section and a tubular mid-section, which is co-axial to a central axis;
- injecting the multiphase fluid mixture into the vessel via an inlet conduit which has a substantially tangential orientation relative to said central axis;
- inducing the fluid mixture to swirl within said tubular mid-section of the vessel at such a speed that liquid and gaseous fractions are separated by cyclonic separation and gravity forces induce the liquid fraction to drop to the bottom section of the vessel;
- removing the gaseous fraction from the interior of the top section of the vessel via a gas outlet conduit which has an entrance opening which is located at or near the central axis;
- removing the liquid fraction from the interior of the bottom section of the vessel via a plurality of liquid outlet openings that are located at different vertical levels and through which liquid is discharged into a liquid outlet conduit such that liquid components with different densities are mixed into a substantially homogeneous liquid fraction.

2. The method of claim 1, wherein the liquid outlet openings are formed by axially spaced perforations of a perforated inflow section of the liquid outlet conduit, which section extends in upward direction into a lower

part of the interior of the separation vessel and is provided with a series of longitudinally spaced perforations.

3. The method of claim 2, wherein the perforated inflow section of the liquid outlet conduit comprises a row of longitudinally spaced perforations and is co-axial to a watercut control conduit, which is rotatable relative to the fixed lower section and is provided with several rows of longitudinally spaced perforations which have different lengths such that different amounts of perforations of the liquid outlet and watercut control conduit are aligned in response to rotation of the watercut control conduit relative to the liquid outlet conduit.

4. The method of claim 2, wherein the perforated inflow section of the liquid outlet conduit is substantially co-axial to the central axis of the tubular mid-section of the separation vessel.

5. The method of claim 1, wherein the central axis has a substantially vertical orientation.

6. A separator for cyclonic separation of gaseous and liquid fractions from a multiphase fluid mixture, which comprises:

- a cyclonic separation vessel having a bottom section, at top section and tubular mid-section which is co-axial to a central axis;
- an inlet conduit for injecting the multiphase fluid mixture into the vessel in a substantially tangential direction relative to said central axis;
- a gas outlet conduit having an entrance opening which is located at or near the central axis for removing the gaseous fraction from the top section of vessel;

- a plurality of liquid outlet openings for removing the liquid fraction from the interior of the bottom section of the vessel into a liquid outlet conduit, which openings are located at different vertical levels and through which in use liquid is discharged into a liquid outlet conduit such that liquid components with different densities are mixed into a substantially homogeneous liquid fraction.

7. The separator of claim 6, wherein the liquid outlet openings are formed by axially spaced perforations of a perforated inflow section of the liquid outlet conduit, which section extends in upward direction into a lower part of the interior of the separation vessel and is provided with a series of longitudinally spaced perforations.

8. The separator of claim 7, wherein the perforated inflow section of the liquid outlet conduit comprises a row of longitudinally spaced perforations and is co-axial to a watercut control conduit, which is rotatable relative to the fixed lower section and is provided with several rows of longitudinally spaced perforations which have different lengths such that different amounts of perforations of the liquid outlet and watercut control conduit are aligned in response to rotation of the watercut control conduit relative to the liquid outlet conduit.

9. The separator of claim 7, wherein the perforated inflow section of the liquid outlet conduit is substantially co-axial to the central axis of the tubular mid-section of the separation vessel.